INDEX to ISA JOURNAL-Volume Four 1957

This is a three-part instant-reference index of all technical articles appearing in Volume 4, 1957, according to month of issue, author, and subject. The page number following the author's name and subject-listing is the first page of the article or articles.

INDEX OF TECHNICAL ARTICLES BY MONTH

Page

JANUARY 1957

...ia Pushes for Technical Supremacy 14A
...Your Problem Too! 1
...erica Has a Challenge, a Special Staff Report 2
...log Computer Simulation of a Chemical Reactor 14
...dging the Gap to the Automatic Factory 19
...trument Department Organization in Processing Plants 22
...w Developments in Continuous Chemical Analysis by Optical Methods 26
...w Ideas in Instrumentation Winners 31

FEBRUARY 1957

...agement Mistakes in Automation 17A
New Order of Management 41
...agement Planning for Automation 42
...ining for Electronics Maintenance 49
...lear Power Reactor Instrumentation and Control 54
...M Proving-Ground Instrumentation 60
...puters for Business and Management 62
...e Logic of V-Brush Analog-to-Digital Converters 66
...w Ideas in Instrumentation Contest Winner 70

MARCH 1957

...o-Hundred-Fifty Years of Measuring Instrument Progress 16A
...o Better Serve You 81
...erational Electronic Analog Computers 82
Check List for Successful Instrument Design 89
...ing Valves for Flashing Fluids 92
...puters for Business and Management 98
...e Cost of Pneumatic Control Systems 102
...w Ideas in Instrumentation Contest Winners 107

APRIL 1957

...vernment Instrument Research Data Available to Industry 16A
...blic Disinterest in Science 117
...proving the Infrared Gas Analyzer 118
...strumentation for Low-Temperature Automotive Testing 124
Precision Gas Mixer for Calibrating Analyzers 128
...e Effects of Hysteresis on Derivative Control 136
...erational Electronic Analog Computers 141
...ital Readout for Wind-Tunnel Data 145

MAY 1957

...strumentation in Nuclear Industries 16A
...wer Unlimited! 161
...asurement of Gamma Radiation in the Human Body 162
...troducing Management to Data Logging 166
...asurement of Detonation-Wave Velocities 170
...tting the X-Ray Spectrograph into the Process Control Loop 174
...e Meaning of Engineer's Registration 178
...ouble Shooting Electronic Control Systems 180
...essure Control of Light-Ends Fractionators 185
A Foundation for Our Field 190

JUNE 1957

...at Price Electronic Reliability? 16A
Looking Ahead 205
...strumentation and Control of the Oak Ridge Research Reactor 206
...ploiting the Mass Spectrometer 212
...agnification Change in Schlieren Systems 216
...w to Specify Thermocouple Response 219
...al-Time Analysis of Flight-Test Data 226
...namic Analysis of Heat Exchanger Control 230
...trument Operation and Maintenance in Atomic Energy Plants 236
...undation Feedback 241
...elve Years of ISA Growth 242

JULY 1957

...e Astonishing Computers 16A
...Y — Man's Greatest Exploration! 259
...strumentation of the Chemical Plant for the Oak Ridge Homogenous Reactor 260
...frared Analyzers for In-Plant Process Control 267
How to Select Flowmeters 272
"Made in Japan" Has a New Meaning 275
Operating Principles of Hydraulic Relays 276
Organizing and Training Instrument Personnel 282
Automation of Environmental Testing 286
Who Qualifies as a Professional Engineer 290
Foundation Feedback 296

AUGUST 1957

The Engineer's Contribution to Economic Progress 14A
Semiconductors — Little Giants! 311
IR Solutions to Five Process Problems 312
British I-E-A Exhibit 317
Transistorizing a Power Supply for Telemeters 318
Nondestructive Testing of Nuclear Reactor Components 322
Electric Actuators: Examination and Evaluation 326
Using Hydraulic Relays in Process Control 334
Initial Missile Data Via Drag Cable 338
Control Valve Maintenance 340
Foundation Feedback 345

SEPTEMBER 1957

Automation Behind the Iron Curtain 22A
How to Apply for Professional License 67A
Systems Engineering 361
How to Solve Analyzer Control Problems 363
A Simulator for Nuclear Reactor Operator Training 369
Wide Range Compensation of Steam Flowmeters 374
Instrumentation of IGY 378
Maintaining and Trouble-Shooting Continuous Infrared Analyzers 385
Instrumentation for Solution-Loop Experiments Inside a Nuclear Pile 390
ISA Standards and Practices for the Instrument Industry 394
Foundation Feedback 396
National Committees 432
Section Officers 435
President's Annual Report for 1957 439
Treasurer's Annual Report for 1957 443
Our Job Ahead 446

OCTOBER 1957

Your Rate of Change 453
First Computer-Controller Power System 454
A Pneumatic Analog for Testing and Teaching 459
West German Instrument Industry Moves Ahead 464
Labor and Automation 468
A Continuous Titrator Controller for Chemical Process Slurries 472
Radio-Frequency Analyzers for Laboratory and Plant 474
Telemetering for Interplanetary Flight 478
Foundation Feedback 481

NOVEMBER 1957

Technology and People 16A
Reflections from the New Moon 495
Control System of the Ford Nuclear Reactor 496
How to Increase Tube Life in Electronic Instruments 502
Machine Computation of Gas Compressor Load Curves 507
How to Prepare for Registration Exams 510
The Development of Gas Chromatographs 514
Foundation Feedback 518
Cleveland ISA Show Report 520
Section Meeting Schedule & Programs 544

DECEMBER 1957

Instrumentation Is Automatic Control 12A
Feedback from Engineers 547
The Computer-Team Approach to Control-System Design 548
Past, Present and Future of Gas Chromatography 563
How to Measure Liquid Interface Levels 554
Electrical Meters can do Math, Too! 558
Infrared Headed League 567
Debugging Data-Handling Systems 570
Japanese Study Team Report 575
New Ideas in Instrumentation Contest Winners 576
Foundation Feedback 577
Training the Instrument Sales Engineer 579

AUTHORS

Author	Page(s)
Adams, R. K.	260
Aikman, Russell A.	363
Andreatch, Anthony J.	118
Batke, T. L.	14
Bishop, John F.	19
Blount, George H.	216
Bochemuehl, R. R.	124
Bollinger, Loren E.	170
Boyd, David M., Jr.	Jan. 14A, 136, 275
Brand, Warren H.	326
Bremer, A.	459
Briggs, Rolin H.	282
Carroll, G. C.	22
Cisler, Walter L.	Aug. 14A
Constance, John D.	Sept. 67A; 178, 290, 510
Cooper, O. J.	318
Covey, C. W.	1, 41, 81, 117, 161, 205, 259, 311, 361, 453, 495, 547
Diamond, A. W.	174
Diebold, John	Feb. 17A
Dodge, Lawrence A.	374
Easton, Elmer C.	6
Ewing, Douglas H.	48
Feingold, S. K.	66
Finch, Fred P.	180
Fisher, D. J.	474
Franks, R. G.	14
Frost, H. C	587
Genereaux, R. P.	46
Glasser, L. G.	26
Gomberg, H. J.	496
Grabbe, Eugene M.	62, 98
Grebe, John J.	5
Green, John C.	April 16A
Hackman, J. R.	554
Hainsworth, Bruce D.	230
Harris, W. B.	July 16A
Hart, Porter	472
Heinz, Winfield B.	276, 334
Heller, M. M.	507
Hines, C. K.	212
Holben, Eugene F.	326
Hollander, Leonard	185
Hudson, Howard W.	443
Huzel, Dieter K.	338
James, E. W.	14
Jeffries, Robert J.	42, 446, 585
Jones, Thomas Roy	4
Jordon, Gene M.	216
Kelley, M. T.	474
Kelly, J. L.	571
Kirkbride, Chalmer G.	9
Kissell, Kenneth E.	170
Krause, E. H.	478
Lipinski, Walter C.	54
Lisser, C. S.	260
Liston, Max D.	118
Macan, W. A., III	579
Mahood, R. F.	49, 502
Maley, L. E.	312, 385
Martin, A. J. P.	563
Martinez, Hugo M.	82, 141
MacDonald, Angus A.	June 16A
McConaughy, R. L.	226
Meany, George	11
Metry, George	558
Moffat, Robert J.	219
Moore, Ralph L.	548
Mosher, D. K.	570
Mruk, W. F.	206
O'Connell, James T.	Nov. 16A
Paynter, Henry M.	230
Pekilis, V.	Sept. 22A
Piel, Gerard	Dec. 12A
Ramp, Robert L.	54
Read, J. E.	166
Richards, William A.	236
Ricker, C. W.	496
Ridenour, Louis N.	9
Russell, John A.	390
Schnelle, P. D.	128
Schuch, Robert L.	162
Schultz, W. D.	212
Schwartzenburg, John W.	369
Shapcott, Ralph	272
Shapiro, Justin J.	89
Sheen, Robert T.	2, 7
Siciliano, Rocco C.	10
Silvey, Ted F.	468
Simpson, R. F. C.	43
Skeels, P. C.	60
Slater, Lloyd E.	190, 241, 296, 345, 396, 481, 518, 577
Smith, V. N.	26
Sperry, Albert F.	8, 317
Spracklen, S. B.	514
Stelzner, R. W.	474
Swartout, John A.	May 16A
Thomas, E. I.	102
Tivey, Vincent V.	230
Travers, R. H.	454
Tripp, Ralph	226
Union, D. C.	459
Vollbrecht, Justus T.	302, 353, 398, 439
Wagner, E. B.	474
Walker, B.	174
Walker, J. K.	212
Wall, Robert	267
Walter, Virlyn W.	286
Whitaker, Martin D.	44
Wilson, John N.	322
Woodhull, E. H.	26
Yochelson, S. B.	454
Ziegler, J. G.	92

1957 SUBJECT INDEX

Aeronautical, Flight Testing 226
Analog Computer, Electronic 82, 141
Analog Computer Simulation 14
Analog Converters 66
Analog, Pneumatic 459
Analysis, Frequency Response 230
Analysis, Gas Chromatography 514
Analysis, Infrared Gas 118
Analysis, Optical Instruments 26
Analyzer Transport Lag 363
Analyzers, Ammonia .....Sept. 87A
Analyzers, Calibration 128
Analyzers, Infrared 267, 312, 385
Analyzers, Radio Frequency 474
Argonne Reactor Controls 54
Astonishing Computers .....July 16A
Automatic Control and Society .....Dec. 12A
Automation Hearings .....Sept. 31A, 2
Automation, Labor 468
Automation, USSR .....Sept. 22A
Automative Testing 60, 124

British IEA Exhibit 317
Brushes, Computer 66

Calculations, Computer 98
Cascade Control 363
Chemical Gas Analyzers 118
Chemical Process, Analysis 26
Chemical Process, Computer Control 26
Chemical Process, Computer Simulation 14, 230, 548
Chemical Slurry Titrator 472
Chromatography, Development 514, 563
College Conference Roundup 493
Compensation, Flowmeter 374
Compressors, Gas 507
Computer, Analog, Flight Test 226
Computer, Analog Simulation ...14, 369, 548
Computer Control 19
Computer Power Control 454
Computer-Team Control Design 548
Computers, The Astonishing .....July 16A
Computers, Business & Management ....Jan. 17A, July 16A, 62, 98
Computers, Brush Design 66
Computers, Compressor Load Curves 507
Computers, Electronic 141, 161
Conference, ISA 1957 Annual 398, 520
Conference Roundup, College 493
Congressional Investigation, Automation .....Sept. 31A, 2
Control, Derivative 136
Control, Heat Excahnger 230
Control, Nuclear Reactor 54, 206, 496
Control Problems, Analyzer 363
Control System Analyzer 459
Control-System Design by Computer 548
Control Systems, Cost 102
Control Valve Maintenance 340
Controller, Self Operated 68
Controls, Pressure 185
Cost, Pneumatic Systems 102
Counters, Wave Velocity 170

Data Handling, Computers 141
Data Handling Maintenance 571
Data Handling Readout 145
Data Logging, Management & Business 62, 166
Data Handling, Process 19
Dead Time Analyzer 363
Dead-Weight Tester 31
Debugging Data-Handling Systems 570
Derivative Control 136
Design, Compressor Load Curves 507
Design, Computers 66
Design, Gas Chromatograph 515, 563
Design, Instrument 89
Detonation Wave, Measurement 170
Digital, Converters 66
Digital Readout 145
Directory, ISA National Organization 146, 432
Drag-Cable for Missiles 338
Dust Concentration Meter 70
Dynamics vs. Statics 453

Earnings, Automation 9
Education 1, 3, 6
Education, Automation 44
Education, Control 518, 577
Electric Valve Actuators 326
Electrical Meters do Math 558
Electro-Hydraulic Relays 326, 334
Electro-Pneumatic Actuators 326
Electronic Computers 14, 19, 62, 66, 98, 141, 161, 226, 369, 454, 507
Electronic Computers, Analog 82
Electronic Controls, Maintenance 180
Electronic Reliability ....June 16A, 286, 502
Electronics, Automation 48
Electronics, Training 49
Electronic Tube Life 502
Engineer Shortage 481, 495
Engineering, Organization 22
Engineering, Registration ....Sept. 67A, 69, 178, 290, 510
Engineer's Contribution .....Aug. 14A
Environment Testing 286
Exhibit, ISA 1957 Annual 398, 520
Exports, German Instruments 464

FIER (Foundation) 190
Flashing Fluid, Valves for 92
Flight Test Data 226
Flow, Gas Analyzer 128
Flowmeter Compensation 374
Flowmeters, Basic Types and How to Select 272
Foundation for Instrument Education and Research..190, 241, 296, 345, 396, 481,518, 577
Fractionators, Control 185
Frequency Response 136, 230, 363

Gamma Radiation, Human Body 162
Gas Analyzers, Infrared ..118, 267, 312, 385
Gas Chromatography 514, 563
Gas Chromatography, Past, Present and Future 563
Gas Compressors, Load Curves 507
Gas Mixer, Analyzers 128
German Instrument Industry 464
Government Reports .....April 16A

Hearings, Automation .....Sept. 31A, 2
Heat Exchanger, Analysis 230
Human, Gamma Radiation Tests 162
Human Relations, Automation .....Oct. 16A, 5, 9, 11, 468
Hydraulic Relays, Principles 276, 326, 334
Hysteresis, Derivative Control 136

IGY, Instrumentation of 378
IGY — Man's Greatest Exploration 259
Infrared Analyzer Maintenance 385
Infrared Analyzers, Types of 267
Infrared in Crime Detection 567
Infrared Gas Analyzers 118, 267, 312, 385
Infrared for Processes Control 267, 312
In-Pile Loop Instrumentation 390
Instrument Design 89
Instrument Technician Qualifications 481
Instrumentation Is Automatic Control .....Dec. 12A
Instrumentation in Japan 275
Instrumentation, In-Pile Loop 390
Instrumentation, Reactor Chemical Plant ..260
Instrumentation of Sputnick 572
Integrator 31, 576
Interface Level Measurement 454
ISA 1957 Annual Conference-Exhibit 75, 398, 482, 520
ISA Conference, Telemetering 351
ISA Foundation 190
ISA Membership Qualifications 302, 353
ISA, Officer Reports 439, 443, 446
ISA Organization Roster 146, 432
ISA Recommended Practices 394
ISA Section Officers & Meeting Schedules 152, 435
ISA Symposium, Flight Test 298

Japanese Instrumentation 275
Japanese Study-Team 574
Jet-Pipe Principles 276, 326

Labor, Automation .....Nov. 16A, 468
Liquid Interface Level Meter 554

Magnification, Schlieren Systems 216
Maintaining IR Analyzers 385
Maintenance, Analyzers 128
Maintenance of Data Handling Systems ..571
Maintenance, Electronic Controls 49, 180
Maintenance, Nuclear Instruments 236
Maintenance Organization 22, 282
Maintenance, Training 49, 282
Maintenance, Valve 340
Management, Automation ...Feb. 17A, 41, 42
Management, Computers 62
Management, Data Logging 166
Management, Planning 42
Mass Spectrometer 212
Mathematics with Electrical Meter 558
Measurement, Dust Concentration 70
Measurement, Temperature 219
Measurement, Wave Velocity 170
Missile Data, Drag Cable 338
Missile Telemetering 478

NEAR Civilian Warning System 580
New Ideas in Instrumentation Contest 525, 576
Nondestructive Testing 322
Nuclear, Instrument Maintenance 236
Nuclear Instrumentation .....May 16A
Nuclear Liquid Level Gage 554
Nuclear, Meetings 73
Nuclear Reactor Control 54, 206, 496

Operational Computer 82
Optical Analysis Instruments 26
Optical Systems, Schlieren 216
Organization, Instrument Department..22, 282
Past, Present and Future, Gas Chromatography 563
Personnel, Organizing and Training ....
Petroleum, Fractionator Controls .....
Pneumatic Process Analog .....
Pneumatic Systems, Cost .....
Pneumatics vs. Hydraulics .....
Positioners, Electro-Pneumatic 326,
Power Supply, Transistorized .....
Power System Computer Control .....
Pressure Controls .....
Principles of Hydraulic Relays .....
Process Analyzers..Sept. 87A, 267, 312, 363, 385,
Process Control, Hysteresis .....
Process Control, Infrared .....
Process Control, Spectrograph .....
Productivity, Automation .....
Professional Engineer, Registration ....Sept. 67A, 69, 178, 290,
Proving Ground Instrumentation .....

Radiation Testing, Gamma .....
Radio Frequency Analyzers .....
Reactor Chemical Plant Instrumentation ..
Reactor Instrumentation & Control 54, 206, 260, 322, 369, 396,
Reactor Operator Training .....
Reactor Part Testing .....
Real Time, Data Processing .....
Recommended Practices, ISA .....
Registration, Exams .....
Registration, Professional Engineer .....Sept. 67A, 178, 290,
Reliability .....June 16A
Reliability, Electronic Tube .....
Reliability, Missile Telemeter .....
Reliability Testing, Electronic .....
Reports, Research .....April 16A
Research .....
Review, Optical Analysis Instruments ....
Russian Technology .....Jan. 14A, Sept. 22A

Sample Mixing, Analyzers .....
Sampled-Data Control .....
Satellite Instrumentation 259, 383,
Schlieren Optical Systems .....
Schools, Control Courses 518,
Science, Public Interest .....
Selection of Flowmeters .....
Semiconductors — Little Giants .....
Show Report, 1957 .....
Simulating Nuclear Reactor .....
Simulation of Control System, Computer ..
Simulation, Power System .....
Slurries, Titrator for .....
Small Business, Automation .....7, Nov. 30A
Solving Analyzer Lags .....
Spectrograph, X-ray .....
Square Root Extractor .....
Standards, ISA Recommended .....
Steam Flowmeter Compensation .....
Stream Analyzers .....Sept. 87A, 267, 312, 363,
Survey of Graduate Schools .....
Systems Engineering .....

Technical Institutes Control 345,
Technician Shortage 6,
Technology, Automation .....Nov. 16A,
Telemeter, Transistorized .....
Telemetering, Interplanetary Missile .....
Temperature, Testing .....
Temperature, Thermocouple .....
Testing, Automative 60, 124
Thermocouple, Response Time .....
Titrator for Slurries .....
Training, Electronics .....
Training Instrument Personnel 282,
Training Instrument Sales Engineers ....
Training by Pneumatic Analog .....
Training Reactor Operators .....
Transistorizing Power Supply .....
Trouble-Shooting IR Analyzers .....
Tubes, Electronic .....

USSR Automation .....Jan. 14A, Sept. 22A

Valve Actuators, Electric .....
Valve Maintenance .....
Valve Sizing .....
Vanguard Project 259,

Wave Velocity, Measurement 170
Wind Tunnel, Data Handling .....

X-Ray Spectrograph, Process Control ....

Your Rate of Change .....